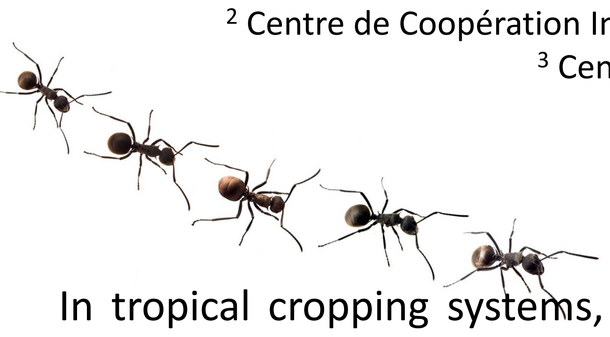
Intercropped cultivated plants control ant community stability and banana weevil damages in plantain agroecosystems

Anicet Gbèblonoudo Dassou[1], Dominique Carval[2], Sylvain Dépigny[2], Pierre-Michel Loubana[3], Philippe Tixier[2]

[1] Laboratory of Biotechnology, Genetic Resources and Plant and Animal Breeding (BIORAVE), Polytechnic University of Abomey, Dassa, Benin
[2] Centre de Coopération Internationale en Recherches agronomiques pour le Développement (Cirad), BP: 34398 Montpellier , cedex 5, France
[3] Centre Africain de Recherches sur les Bananiers et Plantains (CARBAP), BP:32 Douala, Cameroun

Contact: ***dassoua@yahoo.fr***

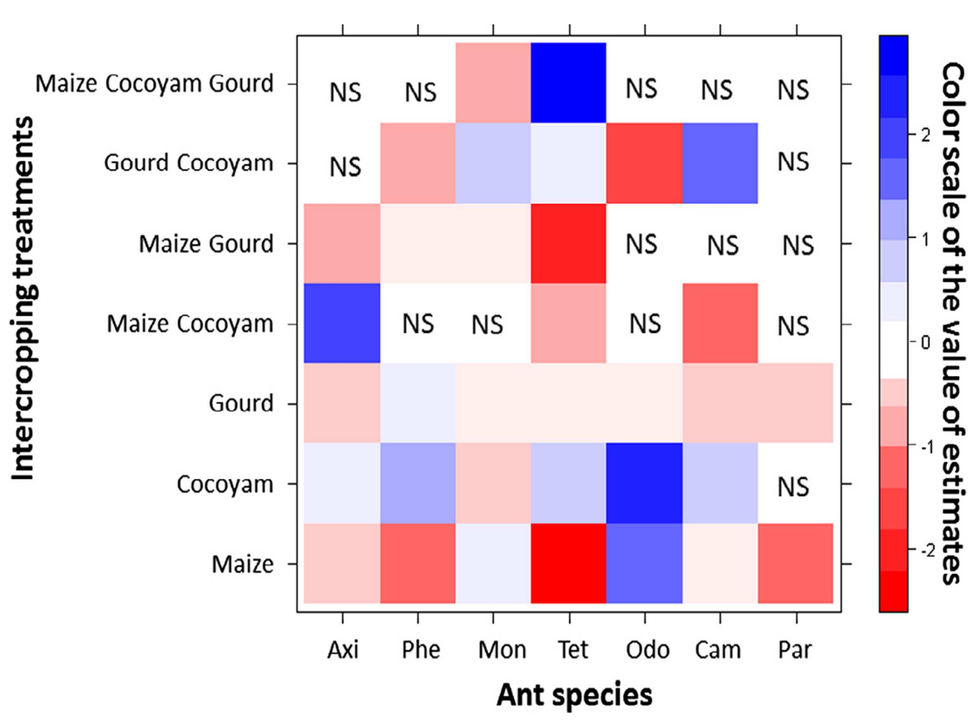


In tropical cropping systems, ants represent an important arthropod group and contribute to several ecosystem services including pest regulation. Some species of ants are known to control populations of banana weevil *Cosmopolites sordidus*, which is a major limitation of plantain production in Cameroon. To unravel how plants associated to plantain modify the ant community and *in fine* the control of banana weevil, we tested the association of plantains with three intercrops: maize *Zea mays*, cocoyam *Xanthosoma sagittifolium,* gourd *Lagenaria siceraria*, and all their combinations.

Maize intercropped with plantain

Relationship between the association of plantains with three intercrops and ant abundances

- Our experiment, carried out in the CARBAP research station (Njombé, Cameroon), was composed of 4 randomized blocks with 8 treatments (20m² each).
- In each replicate, we measured i) the abundance of ants using bait traps and ii) the damages of *C. sordidus* on each plantain plant by using the Vilardebo index.



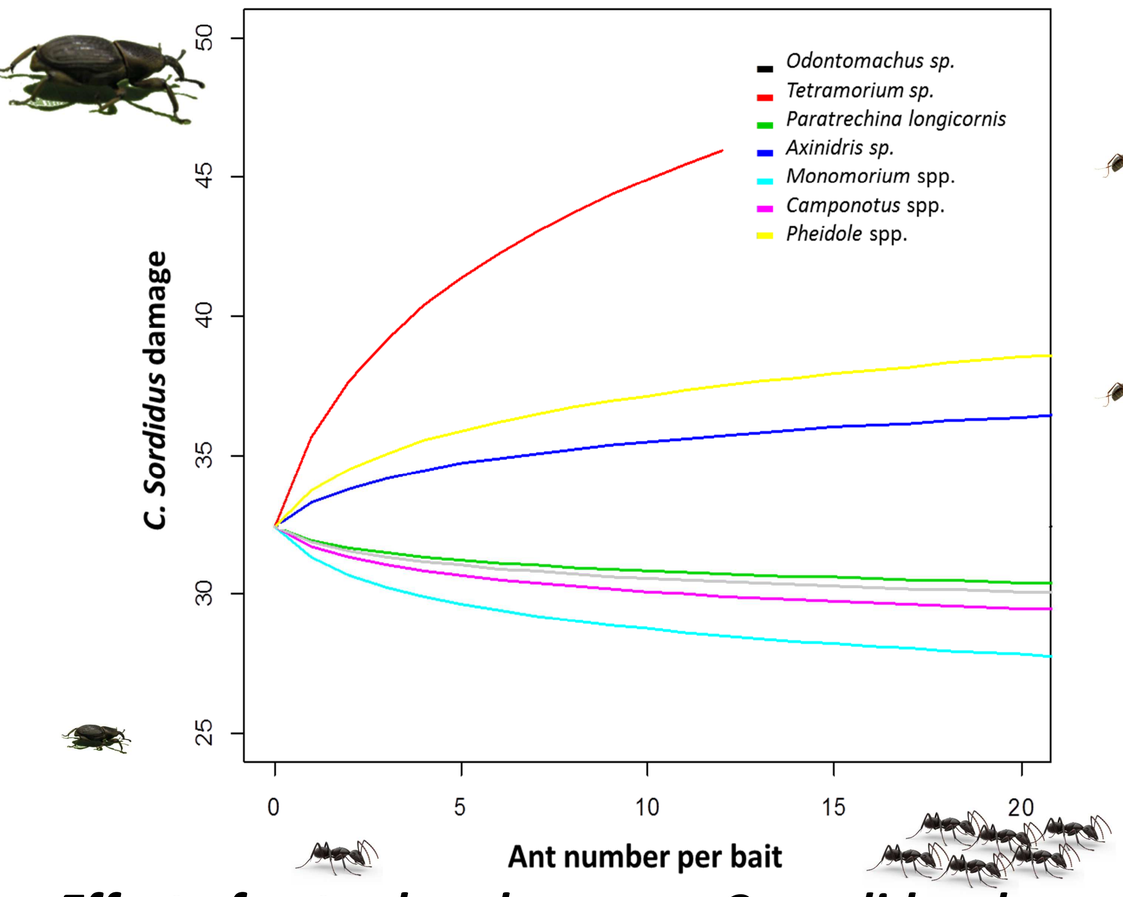
Effects of intercrops on ants abundances

A total of 12 197 ants belonging to 7 taxa were counted.

Pheidole spp. was the most abundant taxon, followed by *Paratrechina longicornis, Tetramorium* sp., *Monomorium* spp., *Camponotus* spp., *Axinidris* sp., *Odontomachus sp.*.

→ Our results showed that associated crops had a significant (positive or negative) effect on the abundance of most ant species

Relationship between the association of plantains with three intercrops and *C. sordidus* damage



Effect of ants abundances on C. sordidus damages

We showed that *C. sordidus* damages were either negatively or positively correlated to ant abundances

***Monomorium* spp. and *Camponotus* spp. taxa that were most negatively correlated with *C. sordidus* damages, while *Tetramorium* sp. and *Pheidole* spp. were the most positively correlated with *C. sordidus* damages**

References

Dassou A. G, Carval D, Dépigny S, Fansi G.H, Tixier P. (2015). Ant abundance and *Cosmopolites sordidus* damage in plantain fields as affected by intercropping. *Biological Control*. 2015;81:51-7.

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